




## How Preschool Changes the Brain

By [Jonah Lehrer](#)  July 27, 2010 | 3:04 pm | Categories: [Frontal Cortex](#)

We live in a world of scarce governmental resources, and they seem to be getting scarcer. This means it's more important than ever to pick our public investments wisely. A new [paper](#) by Flavio Cunha, an economist at the University of Pennsylvania, and James Heckman, a Nobel Laureate at the University of Chicago, documents the wisdom of one particular kind of investment: Preschool.

While the economists cite a wide variety of research, their most impressive evidence consists of a few different studies that looked at the long-term effects of early childhood education. Let's begin with the Perry Preschool Experiment, which consisted of 123 low income African-American children from Ypsilanti, Michigan. (All the children had IQ scores between 75 and 85.) When the children were three years old, they were randomly assigned to either a treatment group, and given a high-quality preschool education, or to a control group, which received no preschool education at all. The subjects were then tracked over the ensuing decades, with the most recent analysis comparing the groups at the age of 40. The differences, even decades after the intervention, were stark: Adults assigned to the preschool program were 20 percent more likely to have graduated from high school and 19 percent less likely to have been arrested more than five times. They got much better grades, were more likely to remain married and were less dependent on welfare programs.

How does preschool work its magic? Interestingly, the Perry Preschool didn't lead to a lasting boost in IQ scores. While kids exposed to preschool got an initial bump in general intelligence, this dissipated by second grade. Instead, preschool seemed to improve performance on a variety of "non-cognitive" abilities, such as self-control, persistence and grit. While society has long obsessed over raw smarts – just look at our fixation on IQ scores – Heckman and Cunha argue that these non-cognitive traits are often more important. They note, for instance, that dependability is the trait most valued by employers, while "perseverance, dependability and consistency are the most important predictors of grades in school." Of course, these valuable skills have little or anything to do with general intelligence. And that's probably a good thing, since our non-cognitive traits are much more malleable, at least when interventions occur at an early age, than IQ. Preschool might not make us smarter – our intelligence is strongly shaped by our genes – but it can make us a better person, and that's even more important.

Just look at the [data](#) on the GED program, which administers a battery of cognitive tests to high school dropouts to assess whether or not their level of academic attainment is equivalent to high school graduates. Heckman has found that, once "measured ability" is controlled for, GED recipients tend to earn the same or less than dropouts without the degree. The reason is simple: While young

people with GEDs have significantly higher cognitive skills than dropouts, they often exhibit the same problems (or worse) with self-control and self-discipline. These non-cognitive deficits are what hold them back.

While the Perry Preschool experiment is the best controlled longitudinal study in support of early education, there appears to be nothing special or unique about the Michigan preschool. Cunha and Heckman cite other studies, such as the Abecedarian Project and the Chicago Child-Parent Center Program, which show similar gains from early education. (The main difference is that the Abecedarian program did manage to boost IQ scores over the long term, but only among girls, and only for those who began the program at a very young age.) Furthermore, the gains from preschool appear to be so significant and consistent that, according to Cunha and Heckman, investing in early childhood education is just about the most cost-effective way to spend public money. The economists calculate that, for every dollar invested in preschool for at-risk children, society at large reaps somewhere between eight and nine dollars in return. That's how I want my tax-dollars spent.

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Posted by: aka\_mythos | 07/27/10 | 3:38 pm |

I think it would be interesting to look into why by 2nd grade any intelligence advantage a child may have had disappears. I would wonder if some sort of honors based education at that level which segregates the achieving students from underachieving ones would promote a continued advantage.

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